

L Number	Hits	Search Text	DB	Time stamp
29	20	((((429/199,307,345) or (252/62.2) or (423/301,323) or (568/16)).CCLS.) and (fluoro\$8phosphate fluoro\$8phosphates (fluoro\$8 adj phosphate) (fluoro\$8 adj phosphates))	USPAT; US-PGPUB	2004/06/08 18:50
30	3	((((429/199,307,345) or (252/62.2) or (423/301,323) or (568/16)).CCLS.) and (fluoro\$8phosphate fluoro\$8phosphates (fluoro\$8 adj phosphate) (fluoro\$8 adj phosphates))) and @PD>20030808	USPAT; US-PGPUB	2004/06/08 18:04
31	494	(361/503-505).CCLS.	USPAT; US-PGPUB	2004/06/08 18:40
32	5	((361/503-505).CCLS.) and (fluoro\$8phosphate fluoro\$8phosphates (fluoro\$8 adj phosphate) (fluoro\$8 adj phosphates))	USPAT; US-PGPUB	2004/06/08 18:51
33	4	((361/503-505).CCLS.) and (fluoro\$8phosphate fluoro\$8phosphates (fluoro\$8 adj phosphate) (fluoro\$8 adj phosphates))) not (((((429/199,307,345) or (252/62.2) or (423/301,323) or (568/16)).CCLS.) and (fluoro\$8phosphate fluoro\$8phosphates (fluoro\$8 adj phosphate) (fluoro\$8 adj phosphates))) and @PD>20030808)	USPAT; US-PGPUB	2004/06/08 18:51

=> FILE REG

FILE 'REGISTRY' ENTERED AT 11:51:41 ON 08 JUN 2004
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STRUCTURE FILE UPDATES: 7 JUN 2004 HIGHEST RN 690625-61-7
DICTIONARY FILE UPDATES: 7 JUN 2004 HIGHEST RN 690625-61-7

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

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Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
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<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> FILE HCAPLUS

FILE 'HCAPLUS' ENTERED AT 11:51:46 ON 08 JUN 2004
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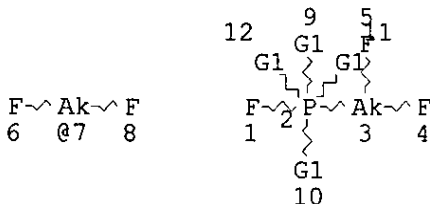
FILE COVERS 1907 - 8 Jun 2004 VOL 140 ISS 24
FILE LAST UPDATED: 7 Jun 2004 (20040607/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> D QUE

L46

STR



*99 structures from
this query*

*VAR G1=F/7

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

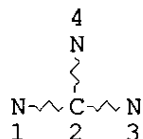
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE

L48 99 SEA FILE=REGISTRY SSS FUL L46

L49 STR



1.

Subset search with structure 1 or 2

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

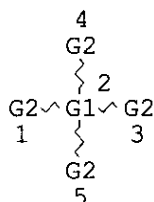
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 4

STEREO ATTRIBUTES: NONE

L52 STR



2.

35 structures found

VAR G1=P/N

VAR G2=H/AK/N/CB

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE

L54 35 SEA FILE=REGISTRY SUB=L48 SSS FUL (L49 OR L52)

L56 12 SEA FILE=HCAPLUS ABB=ON L54

=> D L56 ALL 1-12 HITSTR

12 CA references

L56 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:141563 HCAPLUS

DN 140:195872

ED Entered STN: 20 Feb 2004

*TI Gel electrophoresis process using ionic liquids for solubilizing highly hydrophobic proteins
 IN Anderson, Norman G.; Braatz, James A.
 PA USA
 SO U.S. Pat. Appl. Publ., 12 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM G01N027-26
 ICS G01N027-447
 NCL 204468000; 204456000; 204606000
 CC 9-7 (Biochemical Methods)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004031685	A1	20040219	US 2002-218111	20020814
	WO 2004024279	A2	20040325	WO 2003-US25618	20030814
	WO 2004024279	A3	20040429		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM				
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRAI US 2002-218111 A 20020814

AB Highly hydrophobic compds. and hydrophobic proteins are solubilized in a non-aqueous solvent containing an electrolyte for electrophoretic separation
 The

non-aqueous solvent is an ionic liquid or a mixture of an organic solvent containing an ionic liquid in an amount to render the solvent elec. conductive and amenable for electrophoretic separation The hydrophobic proteins are separated by electrophoresis using an electrophoresis gel that is compatible with the organic solvent and ionic liquid The formation of a non-aqueous electrophoresis

polyurethane gel containing the ionic liquid 1-ethyl-3-methyl-1H-imidazolium trifluoromethane sulfonate (EMITMS) is demonstrated. Hypol G-50 prepolymer was used as a precursor for the polyurethane gel. A surfactant ionic liquid was prepared using SDS and 1-ethyl-3-methyl-1H-imidazolium chloride.

ST gel electrophoresis ionic liq hydrophobic protein solubilization;
 polyurethane gel electrophoresis surfactant ionic liq EMITMS

IT Functional groups
 (alkenyl, ionic liquid containing; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Surfactants
 (anionic, alkenyl, ionic liquid containing; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Alkanes, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (branched, organic solvent; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Gel electrophoresis

- (capillary; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Amines, reactions
 - RL: RCT (Reactant); RACT (Reactant or reagent)
 - (diamines, crosslinking agent; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Capillary electrophoresis
 - Capillary electrophoresis apparatus
 - Crosslinking agents
 - Electric current
 - Electric potential
 - Electrolytes
 - Electrolytic solutions
 - Electrophoresis
 - Gel electrophoresis
 - Ionic liquids
 - Solubilization
 - Solubilizers
 - (gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Capillary electrophoresis
 - (gel; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Polymers, uses
 - Polyurethanes, uses
 - RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
 - (gel; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Proteins
 - RL: PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PYP (Physical process); PREP (Preparation); PROC (Process)
 - (hydrophobic; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Alkyl groups
 - Cations
 - Counterions
 - Phosphate group
 - (ionic liquid containing; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Carboxyl group
 - (ionized, ionic liquid containing; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Polyurethanes, uses
 - RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
 - (isocyanate-terminated, gel; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Electric conductors
 - (liquid, organic; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Proteins
 - RL: PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PYP (Physical process); PREP (Preparation); PROC (Process)
 - (membrane; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)
- IT Alcohols, uses
 - Alkanes, uses
 - Alkenes, uses
 - Aromatic compounds
 - Cycloalkanes

Cycloalkenes
Heterocyclic compounds
Ketones, uses
Nitriles, uses
Nitrites
Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(organic solvent; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Cations
(organic, ionic liquid containing; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Solvents
(organic; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Laser ionization mass spectrometry
(photodesorption, matrix-assisted, gel electrophoresis application to; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Laser desorption mass spectrometry
(photoionization, matrix-assisted, gel electrophoresis application to; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Polyurethanes, uses
RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
(polyurea-, gel; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Polyureas
RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
(polyurethane-, gel; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Macromolecular compounds
Peptides, preparation
Proteins
RL: PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PYP (Physical process); PREP (Preparation); PROC (Process)
(separation of; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Functional groups
(sulfate, ionic liquid containing; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT Gel electrophoresis apparatus
(tube or slab; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT 107-15-3, Ethylenediamine, reactions 9046-10-0, Jeffamine D-2000
RL: RCT (Reactant); RACT (Reactant or reagent)
(crosslinker; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT 151-21-3, SDS, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT 142-98-3, Decylsulfate 151-41-7 14797-55-8, Nitrate, uses 14874-70-5, Tetrafluoroborate 16887-00-6, Chloride, uses 16919-18-9, Hexafluorophosphate 16969-45-2, Pyridinium 16973-45-8, Hexafluoroarsenate 16984-48-8, Fluoride, uses 17009-90-4, Imidazolium 17009-91-5, Pyrazolium 17009-93-7, Pyrazinium 17009-95-9, Pyrimidinium 17009-97-1, Pyridazinium 17611-22-2, Tetrachloroaluminate 28589-79-9,

Thiazolium 37181-39-8, Triflate 45043-58-1 **45224-05-3**
 50653-68-4 64001-57-6, Oxazolium 64544-32-7 236111-23-2
 236111-29-8 365460-36-2 **534601-06-4** 660823-80-3
 662111-74-2 662111-75-3

RL: NUU (Other use, unclassified); USES (Uses)
 (ionic liquid containing; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT 65039-09-0 174501-64-5, 1-Butyl-3-methylimidazolium hexafluorophosphate
 174899-82-2, 1-Ethyl-3-methylimidazolium bis(trifluoromethanesulfonyl)
 imide 186088-50-6 203389-24-6, 1-Butylpyridinium nitrate 268212-75-5
 377080-53-0 660823-81-4

RL: NUU (Other use, unclassified); USES (Uses)
 (ionic liquid; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT 660823-82-5P
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (ionic liquid; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

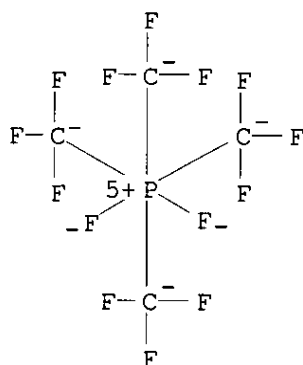
IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0, 2-Propanol,
 uses 67-64-1, Acetone, uses 67-66-3, Trichloromethane, uses 67-68-5,
 Methylsulfoxide, uses 68-12-2, Dimethyl formamide, uses 71-43-2,
 Benzene, uses 75-05-8, Acetonitrile, uses 75-09-2, Methylene chloride,
 uses 78-93-3, Methyleneethylketone, uses 107-06-2, 1,2-Dichloroethane,
 uses 108-88-3, Toluene, uses 111-65-9, Octane, uses 127-19-5,
 N,N-Dimethylacetamide 872-50-4, 1-Methyl-2-pyrrolidone, uses
 1330-20-7, Xylene, uses 25322-68-3, PEG 27138-19-8, Ethyl Naphthalene

RL: NUU (Other use, unclassified); USES (Uses)
 (organic solvent; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

IT 261958-78-5, HYPOL G-50
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepolymer; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

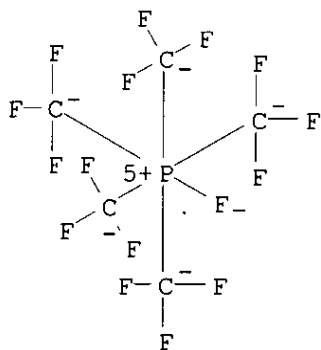
IT **45224-05-3 534601-06-4**
 RL: NUU (Other use, unclassified); USES (Uses)
 (ionic liquid containing; gel electrophoresis process using ionic liqs. for solubilizing highly hydrophobic proteins)

RN 45224-05-3 HCAPLUS
 CN Phosphate(1-), difluorotetrakis(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 534601-06-4 HCAPLUS
 CN Phosphate(1-), fluoropentakis(trifluoromethyl)-, (OC-6-22)- (9CI) (CA

INDEX NAME)

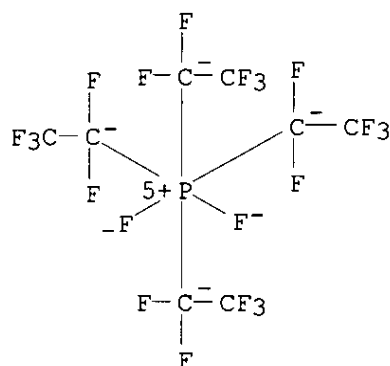


L56 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:801663 HCAPLUS
 DN 140:166633
 ED Entered STN: 13 Oct 2003
 TI On the use of LiPF₃(CF₂CF₃)₃ (LiFAP) solutions for Li-ion batteries.
 Electrochemical and thermal studies
 AU Gnanaraj, J. S.; Zinigrad, E.; Asraf, L.; Sprecher, M.; Gottlieb, H. E.;
 Geissler, W.; Schmidt, M.; Aurbach, D.
 CS Department of Chemistry, Bar-Ilan University, Ramat-Gan, 52900, Israel
 SO Electrochemistry Communications (2003), 5(11), 946-951
 CODEN: ECCMF9; ISSN: 1388-2481
 PB Elsevier Science B.V.
 DT Journal
 LA English
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 76
 AB Electrolyte solns. comprising a mixture of LiPF₆ and LiPF₃(CF₂CF₃)₃ (LiFAP) in alkyl carbonates (ethylene, di-Me and di-Et carbonate) are superior to single salt LiFAP or LiPF₆ solns. for lithium-graphite anodes at elevated temps. Graphite electrodes could be cycled (Li insertion-deinsertion) more than hundred times at 80° with high and stable capacity in the two-salt solns., while in the single-salt solns. this was impossible. Preliminary studies by voltammetry and impedance spectroscopy indicate that the combination of the two salts in solution has a unique influence on the electrodes surface (not yet defined). Thermal studies by accelerating rate and DSC show that thermal decomposition of LiFAP solns. has a higher onset, but very high heat and pressure developing rates, compared to LiPF₆ solns. The presence of LiPF₆ in LiFAP solns. decreased their self-heating and pressure-developing rates pronouncedly. From product anal. of the thermal reactions by NMR, FTIR and MS, the authors can suggest possible unique bulk reactions that occur in LiPF₆-LiFAP solns. One of these is a nucleophilic reaction between F⁻ and PF₃(CF₂CF₃)₃⁻, which may neutralize the effect of trace HF in solns. (thus forming new P-F bonds and HCF₂CF₃). Such a reaction should have a pos. effect on both the performance of the Li-graphite electrodes and the thermal behavior of the solns.
 ST perfluoroethyl lithium perfluoroalkyl binary battery electrolyte thermal decompn stability; lithium ion secondary battery electrochem cyclic voltammetry graphite anode
 IT Fluoropolymers, uses
 RL: DEV (Device component use); PRP (Properties); USES (Uses)

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

- (binder; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Battery anodes
 - Cyclic voltammetry
 - (electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Polyoxyalkylenes, formation (nonpreparative)
 - RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 - (electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Battery electrolytes
 - (for anodes; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Secondary batteries
 - (lithium; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Electric conductivity
 - (of electrolyte solns.; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Electric current-potential relationship
 - (of graphite electrodes with these electrolytes; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Lithiation
 - (of graphite; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Thermal decomposition
 - (of lithium fluorophosphate salts; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Polymers, properties
 - RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
 - (phosphorus-containing; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT Electric impedance
 - (spectroscopy; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT 24937-79-9, Polyvinylidene fluoride
 - RL: DEV (Device component use); PRP (Properties); USES (Uses)
 - (binder; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT 7439-93-2, Lithium, uses 7440-50-8, Copper, uses
 - RL: DEV (Device component use); USES (Uses)
 - (electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT 7782-42-5, KS-6, uses
 - RL: DEV (Device component use); PRP (Properties); USES (Uses)
 - (electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT 64-17-5, Ethanol, formation (nonpreparative) 67-56-1, Methanol, formation (nonpreparative) 74-84-0, Ethane, formation (nonpreparative) 75-37-6, 1,1-Difluoroethane 124-38-9, Carbon dioxide, formation (nonpreparative) 371-62-0, 2-Fluoroethanol 7723-14-0D, Phosphorus, perfluoroethyl phosphide derivs. 25322-68-3, Polyethylene glycol 58431-32-6, Tris(pentafluoroethyl)phosphine oxide 103321-11-5 **403694-33-7** 534601-14-4 654067-75-1
 - RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 - (electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)

- IT 107-21-1, Ethylene glycol, properties 353-36-6, Ethylfluoride
593-53-3, Methylfluoride 24389-25-1
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT 16984-48-8, Fluoride, reactions
RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT 403699-22-9
RL: DEV (Device component use); PRP (Properties); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(electrolyte solns. with carbonates and lithium fluorophosphate salts; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- IT 96-49-1, Ethylene carbonate 105-58-8, Di ethyl carbonate 616-38-6, Dimethyl carbonate 21324-40-3, Lithium hexafluorophosphate (LiPF_6)
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(electrolyte solns. with carbonates and lithium fluorophosphate salts; electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE
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 - (21) Zhang, S; J Power Sour 2003, V113, P166 HCAPLUS
- IT 403694-33-7
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(electrochem. and thermal studies on use of $\text{LiPF}_3(\text{CF}_2\text{CF}_3)_3$ (LiFAP) solns. with LiPF_6 for Li-ion batteries)
- RN 403694-33-7 HCAPLUS
- CN Phosphate(1-), difluorotetrakis(pentafluoroethyl)-, lithium (9CI) (CA INDEX NAME)



L56 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:731243 HCAPLUS
 DN 140:59250
 ED Entered STN: 18 Sep 2003
 TI Determination of hydrogen concentration in ionic liquids and the effect
 (or lack of) on rates of hydrogenation
 AU Dyson, Paul J.; Laurenczy, Gabor; Ohlin, C. Andre; Vallance, James;
 Welton, Thomas
 CS Ecole Polytechnique Federale de Lausanne, EPFL-BCH, Institut de Chimie
 Moleculaire et Biologique, Lausanne, CH-1015, Switz.
 SO Chemical Communications (Cambridge, United Kingdom) (2003), (19),
 2418-2419
 CODEN: CHCOFS; ISSN: 1359-7345
 PB Royal Society of Chemistry
 DT Journal
 LA English
 CC 22-7 (Physical Organic Chemistry)
 AB The solubility of hydrogen and the corresponding Henry coeffs. for 11 ionic
 liqs. have been determined in situ at 100 atm H₂ pressure and are much lower
 than expected; attempts to correlate the solubility of hydrogen in the ionic
 liqs. with the rate of reaction for the hydrogenation of benzene to
 cyclohexane in these solvents have been made.
 ST hydrogen soly ionic liq effect hydrogenation rate
 IT Density
 Henry's law
 Hydrogenation kinetics
 Ionic liquids
 Viscosity
 (determination of hydrogen concentration in ionic liqs. and effect on rates
 of hydrogenation)
 IT Hydrogenation
 (of benzene; determination of hydrogen concentration in ionic liqs. and
 effect on rates of hydrogenation)
 IT Solubility
 (of hydrogen; determination of hydrogen concentration in ionic liqs. and
 effect on

rates of hydrogenation)
 IT 71-43-2, Benzene, reactions
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
 (determination of hydrogen concentration in ionic liqs. and effect on rates of hydrogenation)
 IT 1333-74-0, Hydrogen, reactions
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (determination of hydrogen concentration in ionic liqs. and effect on rates of hydrogenation)
 IT 110-82-7, Cyclohexane, uses
 RL: FMU (Formation, unclassified); NUU (Other use, unclassified); FORM (Formation, nonpreparative); USES (Uses)
 (solvent; determination of hydrogen concentration in ionic liqs. and effect on rates of hydrogenation)
 IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 108-88-3, Toluene, uses 7732-18-5, Water, uses 174501-64-5, 1-Butyl-3-methylimidazolium hexafluorophosphate 174501-65-6, 1-Butyl-3-methylimidazolium tetrafluoroborate 174645-81-9, 1-Butyl-3-methylimidazolium hexafluoroantimonate 174899-66-2, 1-Butyl-3-methylimidazolium triflate 174899-83-3, 1-Butyl-3-methylimidazolium bistriflimide 174899-94-6, 1-Butyl-3-methylimidazolium trifluoroacetate 187863-42-9 223437-11-4, N,N-Butylmethylpyrrolidinium trifluoromethanesulfonimide 244193-50-8, 1-Hexyl-3-methylimidazolium tetrafluoroborate 244193-52-0, 1-Octyl-3-methylimidazolium tetrafluoroborate 350493-08-2, 3-Butyl-1,2-dimethylimidazolium trifluoromethanesulfonylimide
639092-18-5
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent; determination of hydrogen concentration in ionic liqs. and effect on rates of hydrogenation)

RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD
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P1075

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IT 639092-18-5

RL: NUU (Other use, unclassified); USES (Uses)

(solvent; determination of hydrogen concentration in ionic liqs. and effect on rates

of hydrogenation)

RN 639092-18-5 HCAPLUS

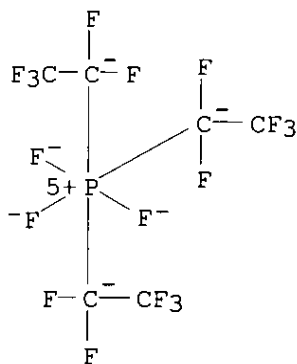
CN Phosphonium, trihexyltetradecyl-, trifluorotris(pentafluoroethyl)phosphate
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 429679-87-8

CMF C6 F18 P

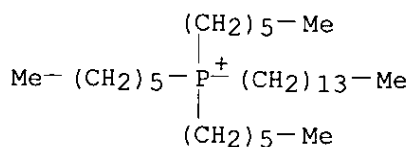
CCI CCS



CM 2

CRN 374683-43-9

CMF C32 H68 P



L56 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:451839 HCAPLUS
 DN 139:9327
 ED Entered STN: 13 Jun 2003
 TI Electrolyte for secondary battery
 IN Omaru, Atsuo; Nirasawa, Takao
 PA Sony Corporation, Japan
 SO Eur. Pat. Appl., 34 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1318562	A2	20030611	EP 2002-26420	20021126
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	JP 2003243033	A2	20030829	JP 2002-173345	<u>20020613</u>
	US 2003190523	A1	20031009	US 2002-314807	<u>20021209</u>
PRAI	JP 2001-376411	A	20011210		
	JP 2002-173345	A	20020613		

AB A secondary battery which exhibits less deterioration of capacity, can maintain high energy densities in high temperature atmospheres, and has high practicality, and an electrolyte used therefor, are provided. The electrolyte contains an anion expressed by (PFaQbRc)-, so degradation of the electrolyte can be prevented. In the formula, Q expresses at least one of CF3, C2F5, and C3F7, and R expresses SO2CF3 and/or SO2C2F5. a, b and c satisfy $1 \leq a \leq 5$, $0 \leq b \leq 5$, and, $0 \leq c \leq 5$, resp. Furthermore, an anion expressed by $\text{N}(\text{CnF2n+1SO2})_2^-$ is contained, which can further prevent the degradation of the electrolyte. In the formula, n satisfies $1 \leq n \leq 2$. Therefore, the capacity recovery rate after storage and heavy load discharge maintenance rate are high even in high temperature atmospheres, and high reliability can be obtained.
 ST electrolyte secondary battery
 IT Polyamides, uses
 RL: DEV (Device component use); USES (Uses)
 (aromatic, separator; electrolyte for secondary battery)
 IT Battery electrolytes
 Petroleum pitch
 Secondary batteries
 (electrolyte for secondary battery)
 IT Coke
 RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (electrolyte for secondary battery)
 IT Alloys, uses
 Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)
 (electrolyte for secondary battery)

IT Transition metal oxides
 RL: DEV (Device component use); USES (Uses)
 (lithiated; electrolyte for secondary battery)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 7439-93-2,
 Lithium, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
 11113-67-0, Iron lithium oxide 11126-15-1, Lithium vanadium oxide
 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium
 hexafluorophosphate 37220-89-6, Aluminum lithium oxide 39300-70-4,
 Lithium nickel oxide 39302-37-9, Lithium titanium oxide 39457-42-6,
 Lithium manganese oxide 52627-24-4, Cobalt lithium oxide 66554-04-9,
 Lithium magnesium oxide
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for secondary battery)

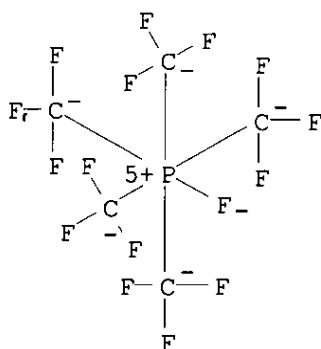
IT 123199-69-9 534601-05-3 **534601-06-4 534601-07-5**
 534601-08-6 534601-09-7 534601-10-0 534601-11-1 534601-12-2
534601-13-3 534601-14-4 534601-15-5 **534601-16-6**
534601-17-7 534601-18-8 534601-19-9 **534601-20-2**
 534601-21-3 534601-22-4 534601-23-5 534601-24-6 534601-25-7
 534601-26-8 534601-27-9 534601-28-0 534601-29-1
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for secondary battery)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9010-79-1,
 Ethylene-propylene copolymer
 RL: DEV (Device component use); USES (Uses)
 (separator; electrolyte for secondary battery)

IT **534601-06-4 534601-07-5 534601-13-3**
534601-16-6 534601-17-7 534601-20-2
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for secondary battery)

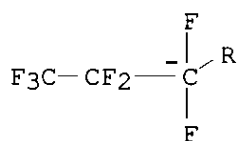
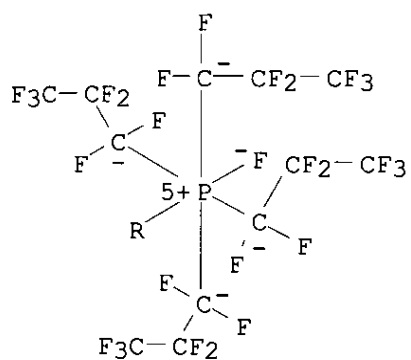
RN 534601-06-4 HCAPLUS

CN Phosphate(1-), fluoropentakis(trifluoromethyl)-, (OC-6-22)- (9CI) (CA
 INDEX NAME)

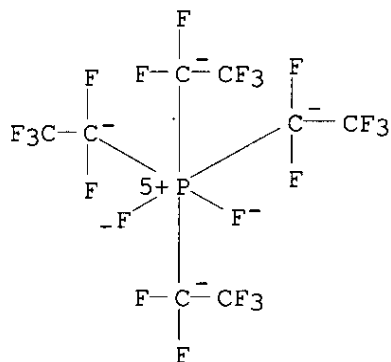


RN 534601-07-5 HCAPLUS

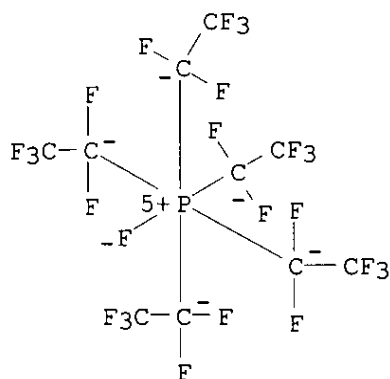
CN Phosphate(1-), fluoropentakis(heptafluoropropyl)-, (OC-6-22)- (9CI) (CA
 INDEX NAME)



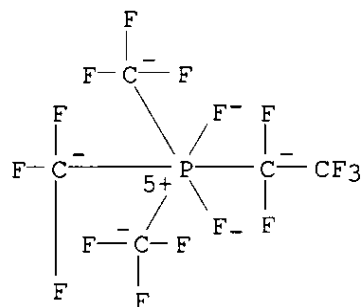
RN 534601-13-3 HCAPLUS
 CN Phosphate(1-), difluorotetrakis(pentafluoroethyl)- (9CI) (CA INDEX NAME)



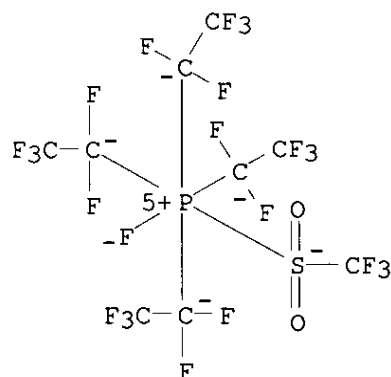
RN 534601-16-6 HCAPLUS
 CN Phosphate(1-), fluoropentakis(pentafluoroethyl)-, (OC-6-22)- (9CI) (CA INDEX NAME)



RN 534601-17-7 HCAPLUS
 CN Phosphate(1-), difluoro(pentafluoroethyl)tris(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 534601-20-2 HCAPLUS
 CN Phosphate(1-), fluorotetrakis(pentafluoroethyl) [(trifluoromethyl)sulfonyl]- (9CI) (CA INDEX NAME)



L56 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:22889 HCAPLUS

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

DN 138:92290
 ED Entered STN: 10 Jan 2003
 TI Synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liquids, and battery electrolytes
 IN Ignatyev, Nikolai; Schmidt, Michael; Kuehner, Andreas; Hilarius, Volker; Heider, Udo; Kucheryna, Andriy; Sartori, Peter; Willner, Helge
 PA Merck Patent G.m.b.H., Germany
 SO PCT Int. Appl., 46 pp.
 CODEN: PIXXD2
 DT Patent
 LA German
 IC ICM C07F009-28
 CC 49-8 (Industrial Inorganic Chemicals)
 Section cross-reference(s): 52

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003002579	A1	20030109	WO 2002-EP6360	20020611
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE 10130940	A1	20030116	DE 2001-10130940	20010627
	EP 1399453	A1	20040324	EP 2002-738157	20020611
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRAI	DE 2001-10130940	A	20010627		
	WO 2002-EP6360	W	20020611		
OS	MARPAT 138:92290				
AB	Novel strong (perfluoroalkyl)phosphorane-type acids and acid salts are of general formulas [RyPF6-y]-.H+ (I) and [RyPF6-y]m-.Mm+ (II), in which R = partially fluorinated or perfluoro-C1-8-alkyl or aryl (in which F or H can be substituted by Cl); y = 1-3; m = 1-3, and Mm+ is a mono-, di-, or trivalent cation (e.g., Li+, Zn2+, Mg2+, Cu2+, Ag+, ammonium, phosphonium, oxonium, sulfonium, arsonium, tropylum, nitryl, nitrosyl, or tris(dialkylamino)carbonium cations). I are prepared by reaction of HF with the corresponding (perfluoroalkyl)fluorophosphoranes, RyPF5-y, in the presence of a solvent or a proton acceptor; similarly, II are prepared from the corresponding I by reaction with a salt, of formula Mm+(A)m-, in which Mm+ is as defined above and (A)m- is a basic or neutral anion that can react with a proton (e.g., a metal, a metal hydride, a metal oxide, or a metal hydroxide). The acids and salts have use as strong acid catalysts, phase transfer catalysts, solvents, ionic liqs., or conducting salts in electrochem. devices (especially battery electrolytes).				
ST	perfluoroalkyl fluorophosphorane strong acid; fluorophosphorane metal salt synthesis; strong acid catalyst battery electrolyte perfluoroalkyl fluorophosphorane				
IT	Phosphonium compounds Sulfonium compounds RL: CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (perfluoroalkyl)fluorophosphorane salts; synthesis, properties, and				

- uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT Onium compounds
 RL: CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (arsonium, (perfluoroalkyl)fluorophosphorane salts; synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT Onium compounds
 RL: CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (oxonium, (perfluoroalkyl)fluorophosphorane salts; synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT Amines, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (polyamines, nonpolymeric, solvent or proton acceptors; synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT Alcohols, uses
 Amines, uses
 Carboxylic acids, uses
 Esters, uses
 Ethers, uses
 Glycols, uses
 Polysulfides
 Sulfides, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent or proton acceptors; synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT Acids, preparation
 RL: CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (strong; synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT Battery electrolytes
 Catalysts
 Ionic liquids
 Phase transfer catalysts
 (synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT Phosphoranes
 RL: CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT 91543-32-7 91543-34-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with HF; in synthesis of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts)
- IT 22474-72-2
 RL: RCT (Reactant); RACT (Reactant or reagent)

- (reaction of, with HF; synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT 77-98-5, Tetraethyl ammonium hydroxide 534-16-7, Silver carbonate 1304-28-5, Barium oxide, reactions 1305-62-0, Calcium hydroxide, reactions 1305-78-8, Calcium oxide, reactions 1306-19-0, Cadmium oxide (CdO), reactions 1309-37-1, Ferric oxide, reactions 1309-42-8, Magnesium hydroxide 1309-48-4, Magnesium oxide, reactions 1310-58-3, Potassium hydroxide, reactions 1310-65-2, Lithium hydroxide 1310-73-2, Sodium hydroxide, reactions 1310-82-3, Rubidium hydroxide 1312-81-8, Lanthanum oxide (La2O3) 1313-59-3, Sodium oxide, reactions 1314-11-0, Strontium oxide, reactions 1314-13-2, Zinc oxide, reactions 1314-36-9, Yttrium oxide (Y2O3), reactions 1314-37-0, Ytterbium oxide (Yb2O3) 1317-38-0, Copper oxide (CuO), reactions 1344-28-1, Alumina, reactions 1345-25-1, Ferrous oxide, reactions 2304-30-5, Tetrabutylphosphonium chloride 3227-62-1, Zinc hydroxycarbonate 7429-90-5, Aluminum, reactions 7439-91-0, Lanthanum, reactions 7439-93-2, Lithium, reactions 7439-95-4, Magnesium, reactions 7440-09-7, Potassium, reactions 7440-17-7, Rubidium, reactions 7440-20-2, Scandium, reactions 7440-23-5, Sodium, reactions 7440-24-6, Strontium, reactions 7440-39-3, Barium, reactions 7440-43-9, Cadmium, reactions 7440-46-2, Cesium, reactions 7440-64-4, Ytterbium, reactions 7440-65-5, Yttrium, reactions 7440-66-6, Zinc, reactions 7440-70-2, Calcium, reactions 7440-74-6, Indium, reactions 7580-67-8, Lithium hydride 7646-69-7, Sodium hydride 7784-21-6, Aluminum hydride 7789-78-8, Calcium hydride 12057-24-8, Lithium oxide, reactions 12060-08-1, Scandium oxide (Sc2O3) 12069-69-1, Basic copper carbonate 12136-45-7, Potassium oxide, reactions 12656-23-4, Yttrium hydride 16509-24-3, Magnesium hydroxycarbonate 17194-00-2, Barium hydroxide 17674-34-9, Scandium hydroxide (Sc(OH)3) 18480-07-4, Strontium hydroxide 20427-58-1, Zinc hydroxide 20427-59-2, Copper hydroxide (Cu(OH)2) 21041-95-2, Cadmium hydroxide (Cd(OH)2) 21351-79-1, Cesium hydroxide 21645-51-2, Aluminum trihydroxide, reactions
- RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of; in synthesis of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts)
- IT 7664-39-3, Hydrogen fluoride, reactions
- RL: RCT (Reactant); RACT (Reactant or reagent)
(reactions of, with phosphoranes; synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT 60-29-7, Diethyl ether, uses 64-17-5, Ethanol, uses 64-19-7, Acetic acid, uses 67-56-1, Methanol, uses 68-12-2, Dimethyl formamide, uses 75-18-3, Dimethyl sulfide 115-10-6, Dimethyl ether 121-44-8, Triethylamine, uses 603-35-0, Triphenylphosphine, uses 616-38-6, Dimethyl carbonate 7732-18-5, Water, uses 7803-51-2, Phosphine
- RL: NUU (Other use, unclassified); USES (Uses)
(solvent or proton acceptors; synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)
- IT 482635-74-5
- RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(synthesis and characterization of; in synthesis of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts)
- IT 7439-93-2DP, Lithium, (perfluoroalkyl)fluorophosphorane salts
7439-95-4DP, Magnesium, (perfluoroalkyl)fluorophosphorane salts
7440-22-4DP, Silver, (perfluoroalkyl)fluorophosphorane salts
7440-50-8DP, Copper, (perfluoroalkyl)fluorophosphorane salts

7440-66-6DP, Zinc, (perfluoroalkyl)fluorophosphorane salts 14452-93-8DP, Nitrosyl, (perfluoroalkyl)fluorophosphorane salts 14522-82-8DP, Nitryl, (perfluoroalkyl)fluorophosphorane salts 14798-03-9DP, Ammonium, (perfluoroalkyl)fluorophosphorane salts 25215-10-5DP, Guanidine, conjugate monoacid, alkyl derivs., (perfluoroalkyl)fluorophosphorane salts 26811-28-9DP, Tropylium, (perfluoroalkyl)fluorophosphorane salts 482635-70-1P **482635-71-2P 482635-72-3P**

482635-73-4P 482649-24-1P, Trifluorotris(heptafluoro-1-propyl)phosphate, acid salt 482649-25-2P, Trifluorotris(nonafluoro-1-butyl)phosphate, acid salt

RL: CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)

IT 403699-22-9P **463944-41-4P** 482635-76-7P 482635-77-8P
482635-78-9P 482635-79-0P 482635-80-3P **482635-81-4P**
482635-83-6P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

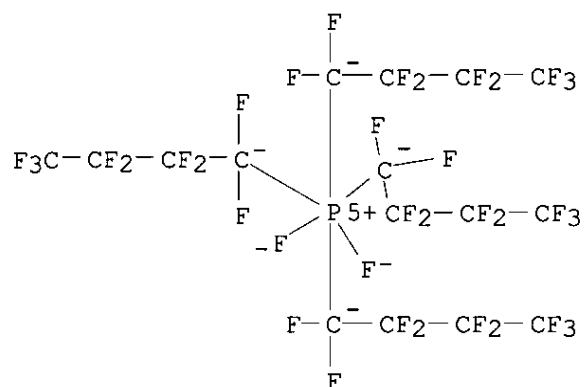
- (1) Bishop; J CHEM SOC (A) 1970, P1074 HCAPLUS
- (2) Chan; CAN J CHEM 1968, V46, P1237 HCAPLUS
- (3) Hilarius, V; WO 0021969 A 2000
- (4) Jander, J; JUSTUS LIEBIGS ANN CHEM 1969, V726, P19 HCAPLUS
- (5) Kita, F; JOURNAL OF POWER SOURCES 2001, P97
- (6) Merck Patent G M B H; EP 1162204 A 2001 HCAPLUS
- (7) Merck Patent G M B H; EP 1178050 A 2002 HCAPLUS
- (8) Merck Patent GmbH; EP 1205998 A 2002 HCAPLUS
- (9) Pavlenko, N; JOURNAL OF GENERAL CHEMISTRY USSR 1989, V59(3), P469

IT **482635-71-2P 482635-72-3P 482635-73-4P**

RL: CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based novel strong acids and acid salts as catalysts, solvents, ionic liqs., and battery electrolytes)

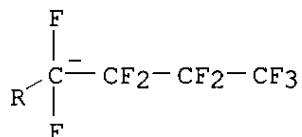
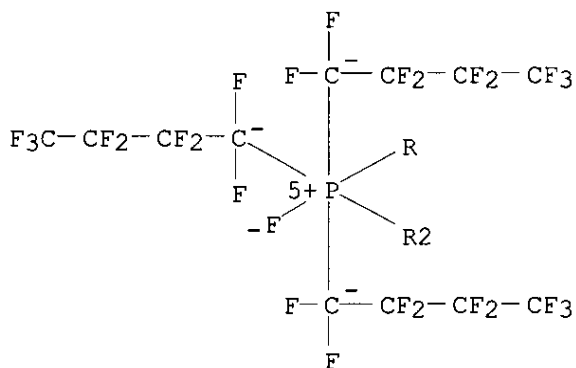
RN 482635-71-2 HCAPLUS

CN Phosphate(1-), difluorotetrakis(nonafluorobutyl)-, hydrogen (9CI) (CA INDEX NAME)

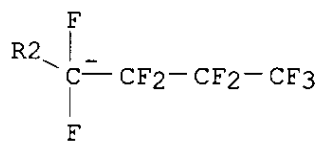


RN 482635-72-3 HCAPLUS
 CN Phosphate(1-), fluoropentakis(nonafluorobutyl)-, hydrogen, (OC-6-21)-
 (9CI) (CA INDEX NAME)

PAGE 1-A

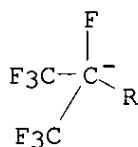
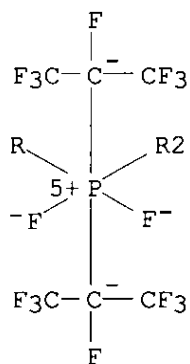


PAGE 2-A

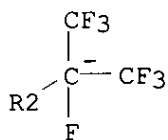


RN 482635-73-4 HCAPLUS
 CN Phosphate(1-), difluorotetrakis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-, hydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IT 463944-41-4P 482635-81-4P 482635-83-6P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(synthesis, properties, and uses of (perfluoroalkyl)phosphorane-based
novel strong acids and acid salts as catalysts, solvents, ionic liqs.,
and battery electrolytes)

RN 463944-41-4 HCAPLUS

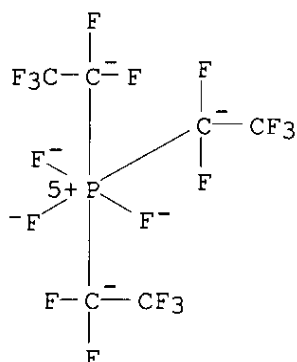
CN Ethanaminium, N,N,N-triethyl-, trifluorotris(pentafluoroethyl)phosphate(1-)
(9CI) (CA INDEX NAME)

CM 1

CRN 429679-87-8

CMF C6 F18 P

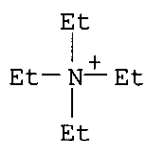
CCI CCS



CM 2

CRN 66-40-0

CMF C8 H20 N



RN 482635-81-4 HCAPLUS

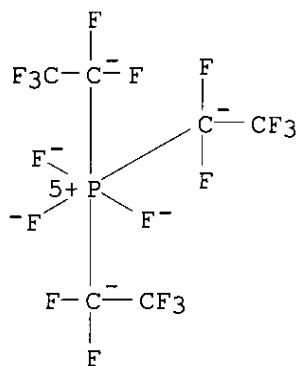
CN Phosphonium, tetrabutyl-, trifluorotris(pentafluoroethyl)phosphate(1-)
(9CI) (CA INDEX NAME)

CM 1

CRN 429679-87-8

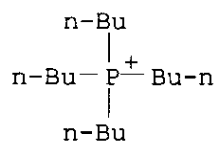
CMF C6 F18 P

CCI CCS



CM 2

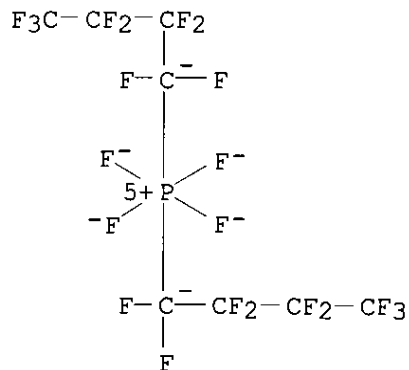
CRN 15853-37-9
CMF C16 H36 P



RN 482635-83-6 HCAPLUS
CN Ethanaminium, N,N,N-triethyl-, tetrafluorobis(nonafluorobutyl)phosphate(1-)
(9CI) (CA INDEX NAME)

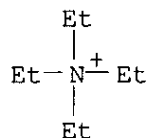
CM 1

CRN 482635-82-5
CMF C8 F22 P
CCI CCS



CM 2

CRN 66-40-0
CMF C8 H20 N



L56 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:750570 HCAPLUS
DN 137:265682
ED Entered STN: 03 Oct 2002
TI Procedure for the production of fluoroalkylphosphates
IN Schmidt, Michael; Kuehner, Andreas; Jungnitz, Michael; Ott, Frank;
Ignatyev, Nicolai
PA Merck Patent G.m.b.H., Germany
SO Ger., 8 pp.
CODEN: GWXXAW
DT Patent
LA German
IC ICM C07F009-52
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 29, 72

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10119278	C1	20021002	DE 2001-10119278	20010420
	JP 2002356491	A2	20021213	JP 2001-297523	20010927
	WO 2002085919	A1	20021031	WO 2002-EP3288	20020323
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRAI DE 2001-10119278 A 20010420

OS MARPAT 137:265682

AB A procedure to produce F alkyl phosphates with the general formula $\text{Mn}^+[\text{PF}_x(\text{CyF}_2\text{y}+1-\text{zHz})_6-x]_n$ where $1 \leq x \leq 6$, $1 \leq y \leq 8$, $0 \leq z \leq 2y+1$, $1 \leq n \leq 3$ and Mn⁺ is a mono-, di- or trivalent cation. Suitable cations include Li; Na; K; Mg; Rb; Cs; aromatic heterocyclic cations; NR₁R₂R₃R₄; PR₁R₂R₃R₄; P[(NR₁R₂)_kR₃mR₄4-k-m] with k=1-4, m=0,3 and k+m<4; C(NR₁R₂)(NR₃R₄)(NR₅R₆); C(Aryl)₃; Rb or Tropylium; and where R₁ to R₆ is H, Alkyl and Aryl(C₁-C₈) that can be partially substituted with F, Cl or Br. The fluoroalkylphosphoranes are converted into the required product with metal or nonmetal fluorides without using solvents in the process. These salts are suitable electrolytes in batteries, condensers, supercondensers and galvanic cells.

ST fluoroalkylphosphate prodn electrolyte battery condenser galvanic cell

IT Polyelectrolytes

(cationic; production of fluoroalkylphosphate electrolytes)

IT Battery electrolytes
Solid electrolytes
(production of fluoroalkylphosphate electrolytes)

IT Electrolytic capacitors
(production of fluoroalkylphosphate electrolytes for condensers)

IT Phosphates, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(production of fluoroalkylphosphates)

IT 205926-54-1P 206057-04-7P **463944-41-4P** 463944-42-5P
RL: IMF (Industrial manufacture); PREP (Preparation)
(production of fluoroalkylphosphates)

IT 665-46-3 7789-23-3, Potassium fluoride (KF) 7789-24-4, Lithium
fluoride (LiF), reactions 91543-32-7 205926-47-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(production of fluoroalkylphosphates)

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; DE 19641138 A1 HCAPLUS

IT **463944-41-4P**
RL: IMF (Industrial manufacture); PREP (Preparation)
(production of fluoroalkylphosphates)

RN 463944-41-4 HCAPLUS

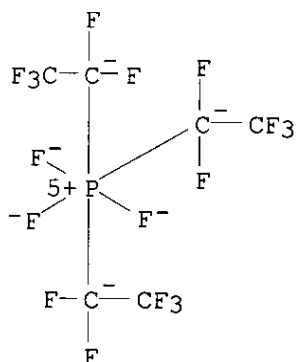
CN Ethanaminium, N,N,N-triethyl-, trifluorotris(pentafluoroethyl)phosphate(1-)
(9CI) (CA INDEX NAME)

CM 1

CRN 429679-87-8

CMF C6 F18 P

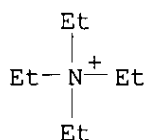
CCI CCS



CM 2

CRN 66-40-0

CMF C8 H20 N



L56 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2002:671916 HCAPLUS
 DN 137:217076
 ED Entered STN: 06 Sep 2002
 TI Preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries
 IN Schmidt, Michael; Kuehner, Andreas; Ignatyev, Nikolai; Satori, Peter
 PA Merck Patent G.m.b.H., Germany
 SO Eur. Pat. Appl., 26 pp.
 CODEN: EPXXDW
 DT Patent
 LA German
 IC ICM C07F009-28
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 72

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1236732	A1	20020904	EP 2002-1914	20020131
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	DE 10109032	A1	20020905	DE 2001-10109032	20010224
	JP 2003034692	A2	20030207	JP 2001-301156	20010928
	TW 527740	B	20030411	TW 2001-90133110	20011231
	CN 1371911	A	20021002	CN 2002-105228	20020221
	BR 2002000465	A	20021029	BR 2002-465	20020221
	US 2002122979	A1	20020905	US 2002-80515	20020225
PRAI	DE 2001-10109032	A	20010224		
OS	CASREACT 137:217076; MARPAT 137:217076				
AB	The preparation of title compds., useful as electrolytes for primary and secondary batteries, is described. Thus, reaction of LiF with perfluoro-1,2-bis(diethyldifluorophosphorano)ethane in a mixture of ethylene carbonate/dimethyl carbonate/diethyl carbonate (solvent mixture) gave the title compound, 2Li+[(C2F5)2PF3(CF2)2PF3(C2F5)]2-, as a mixture of stereoisomers. The oxidation stability of the compound prepared is given.				
ST	fluoroalkyl phosphate salt prepn oxidn stability battery electrolyte				
IT	Superconductor devices (capacitors; preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)				
IT	Battery electrolytes Capacitors Electrolytes (preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)				
IT	Esters, uses Ethers, uses Fluoropolymers, uses Polyphosphazenes Polysiloxanes, uses RL: TEM (Technical or engineered material use); USES (Uses)				

(preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)

IT Secondary batteries
(primary and; preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)

IT Oxidation
(stability; preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)

IT Capacitors
(superconducting; preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)

IT 454458-13-0P
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(oxidation stability; preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)

IT 403699-22-9P **454458-15-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)

IT 7789-24-4, Lithium fluoride, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with fluorinated phosphorus compds.)

IT 91543-32-7, Tris(pentafluoroethyl)difluorophosphorane 454468-19-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with lithium fluoride)

IT 60-29-7, Diethyl ether, uses 67-64-1, Acetone, uses 67-68-5, DMSO, uses 68-12-2, DMF, uses 75-05-8, Acetonitrile, uses 75-18-3, Dimethyl sulfide 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8, Diethyl carbonate 107-13-1, Acrylonitrile, uses 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-94-4, Ethyl formate 110-71-4 127-19-5, Dimethylacetamide 141-78-6, Ethyl acetate, uses 352-93-2, Diethyl sulfide 554-12-1, Methyl propionate 598-03-8 616-38-6, Dimethyl carbonate 623-42-7, Methyl butyrate 623-53-0, Ethyl methyl carbonate 4437-85-8, Butylene carbonate 56525-42-9, Methyl propyl carbonate 73506-93-1, Diethoxyethane
RL: NUU (Other use, unclassified); USES (Uses)
(solvent electrolyte; preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Fild, M; Z ANORG ALLG CHEM 1987, V555, P109 HCAPLUS
(2) Merck Patent GmbH; WO 9815562 A 1998 HCAPLUS

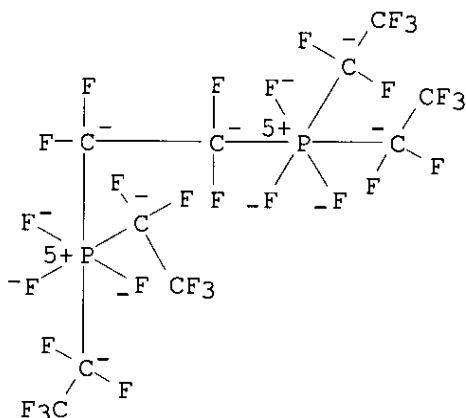
IT **454458-15-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of fluoroalkylphosphate salts as electrolytes for primary and secondary batteries)

RN 454458-15-2 HCAPLUS

CN Ethanaminium, N,N,N-triethyl-, hexafluorotetrakis(pentafluoroethyl)[μ -(1,1,2,2-tetrafluoro-1,2-ethanediyl)]diphosphate(2-) (2:1) (9CI) (CA INDEX NAME)

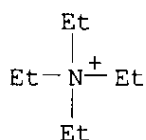
CM 1

CRN 454458-14-1
CMF C10 F30 P2
CCI CCS



CM 2

CRN 66-40-0
CMF C8 H20 N



L56 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:388661 HCAPLUS
DN 136:410180
ED Entered STN: 24 May 2002
TI Nonaqueous electrolytes for electrochemical capacitors
IN Takeda, Masayuki; Takehara, Masahiro; Ue, Makoto
PA Mitsubishi Chemical Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
IC ICM H01G009-038
ICS H01G009-00; H01M010-40
CC 76-10 (Electric Phenomena)
Section cross-reference(s): 72

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002151361	A2	20020524	JP 2000-347833	20001115
PRAI	JP 2000-347833		20001115		
AB	The nonaq. electrolytes contain quaternary onium salts expressed as the formula: Q+[(Rf)nRF6-n], where Q+ is onium ion, Rf is perfluoroalkyl				

group, n is integer 1-6. When n is ≥ 2 , plural number of Rfs can be same or different, and they can bond to form ring structure along with P. The electrolytes are not likely to hydrolytically decomposed compared to tetrafluoroborate.

ST nonaq electrolyte electrochem capacitor

IT Electrolytes

Electrolytic capacitors

(nonaq. electrolytes for electrochem. capacitors)

IT Onium compounds

RL: DEV (Device component use); USES (Uses)

(quaternary; nonaq. electrolytes for electrochem. capacitors)

IT **429679-86-7 429679-88-9 429679-90-3**

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytes for electrochem. capacitors)

IT **429679-86-7 429679-88-9 429679-90-3**

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytes for electrochem. capacitors)

RN 429679-86-7 HCAPLUS

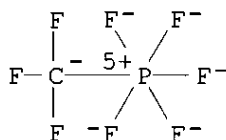
CN Ethanaminium, N,N,N-triethyl-, (OC-6-21)-pentafluoro(trifluoromethyl)phosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 44863-49-2

CMF C F8 P

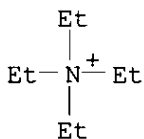
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CM 2

CRN 66-40-0

CMF C8 H20 N



RN 429679-88-9 HCAPLUS

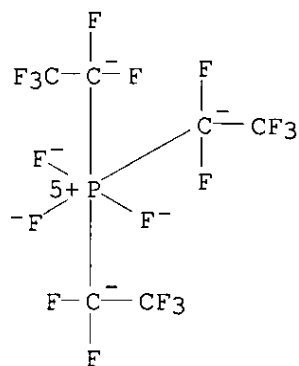
CN Ethanaminium, N,N-diethyl-N-methyl-, trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 429679-87-8

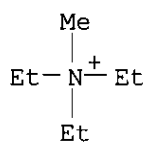
CMF C6 F18 P

CCI CCS



CM 2

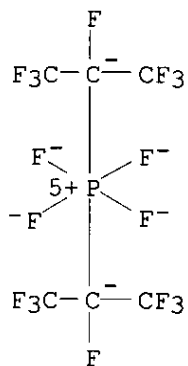
CRN 302-57-8
CMF C7 H18 N



RN 429679-90-3 HCAPLUS
CN Methanaminium, N,N,N-trimethyl-, tetrafluorobis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]phosphate(1-) (9CI) (CA INDEX NAME)

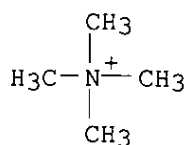
CM 1

CRN 429679-89-0
CMF C6 F18 P
CCI CCS



CM 2

CRN 51-92-3
CMF C4 H12 N



L56 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:364136 HCAPLUS
DN 136:388473
ED Entered STN: 16 May 2002
TI Perfluoroalkyl phosphate salt, organic solvent, and polymer mixtures as electrolytes
IN Schmidt, Michael; Ott, Frank; Jungnitz, Michael; Ignatyev, Nicolai; Kuehner, Andreas
PA Merck Patent GmbH, Germany
SO Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DT Patent
LA German
IC ICM H01M010-40
ICS H01B001-12; H01G009-02; C07F009-28
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1205998	A2	20020515	EP 2001-124178	20011011
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	DE 10055812	A1	20020523	DE 2000-10055812	20001110
	DE 10058264	A1	20020529	DE 2000-10058264	20001123
	CN 1353134	A	20020612	CN 2001-137868	20011109
	US 2002114996	A1	20020822	US 2001-986773	20011109
	BR 2001005142	A	20020625	BR 2001-5142	20011112
	JP 2002249670	A2	20020906	JP 2001-346335	20011112
PRAI	DE 2000-10055812	A	20001110		
	DE 2000-10058264	A	20001123		
OS	MARPAT 136:388473				
AB	Electrolytes for batteries, condensers, supercondensers, and galvanic cells consist of: (1) a fluoroalkyl phosphate salt of general formula $\text{Mn}^+([\text{PF}_x(\text{CyF}_2\text{y}+1-\text{zHz})_6-x])_n$ in which Mn^+ is a monovalent, divalent, or trivalent cation, $x = 1-5$; $1 \leq y \leq 8$; and $z = 2y + 1$; $n = 1-3$; and the ligands $\text{CyF}_2\text{y}+1-\text{zHz}$ are the same or different, (2) an organic solvent, selected from organic carbonates, esters, ethers, amides, a sulfur-containing solvent, and aprotic solvents, and (3) a polymer. The cation (Mn^+) can be a metal ion (e.g., Li^+ , Na^+ , K^+ , Rb^+ , Ce^+ , Mg^{2+} , or Al^{3+}), preferably Li^+ , or an organic cation, such as NR_4^+ , $[\text{P}(\text{NR}_2)_k\text{R}_4-k]^+$ ($k = 0-4$), $[\text{C}(\text{NR}_2)_3]^+$, or $[\text{CR}_3]^+$. The polymer component is selected from homopolymers or copolymers of vinylidenedifluoride, acrylonitrile, Me (meth)acrylate, or THF (preferably polyvinylidene difluoride).				
ST	battery electrolyte fluoroalkyl phosphate salt org carbonate; polymer battery electrolyte fluoroalkyl phosphate				
IT	Solvents (aprotic, electrolytes containing; perfluoroalkyl phosphate salt, organic				

solvent, and polymer mixts. as electrolytes)

IT Superconductor devices
(capacitors, electrolytes for; perfluoroalkyl phosphate salt, organic solvent, and polymer mixts. as electrolytes)

IT Amides, uses
Esters, uses
Ethers, uses
Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(electrolytes containing; perfluoroalkyl phosphate salt, organic solvent, and polymer mixts. as electrolytes)

IT Capacitors
(electrolytes for; perfluoroalkyl phosphate salt, organic solvent, and polymer mixts. as electrolytes)

IT Electrolytes
(for elec. equipment; perfluoroalkyl phosphate salt, organic solvent, and polymer mixts. as electrolytes)

IT Battery electrolytes
(perfluoroalkyl phosphate salt, organic solvent, and polymer mixts. as electrolytes)

IT Capacitors
(superconducting, electrolytes for; perfluoroalkyl phosphate salt, organic solvent, and polymer mixts. as electrolytes)

IT 60-29-7, Diethyl ether, uses 67-64-1, Acetone, uses 67-68-5, DMSO, uses 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl propanoate 105-54-4, Ethyl butyrate 105-58-8, Diethyl carbonate 107-13-1, Acrylonitrile, uses 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-94-4, Ethyl formate 110-71-4 127-19-5, Dimethylacetamide 141-78-6, Ethyl acetate, uses 463-79-6D, Carbonic acid, alkyl esters 554-12-1, Methyl propanoate 616-38-6, Dimethyl carbonate 616-42-2, Dimethyl sulfite 623-42-7, Methyl butyrate 623-53-0, Ethyl methyl carbonate 623-81-4, Diethyl sulfite 1120-71-4, Propanesultone 4437-85-8, Butylene carbonate 24937-79-9, Polyvinylidene difluoride 56525-42-9, Methyl propyl carbonate 73506-93-1, Diethoxyethane 206057-04-7 377739-48-5
394692-80-9 394692-84-3 394692-91-2
394692-92-3 394692-93-4 394692-94-5
425633-73-4 425633-74-5 425633-75-6
425633-76-7
RL: TEM (Technical or engineered material use); USES (Uses)
(electrolytes containing; perfluoroalkyl phosphate salt, organic solvent, and polymer mixts. as electrolytes)

IT 7789-24-4, Lithium fluoride, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with difluorotris(pentafluoroethyl)phosphorane or difluorotris(nonafluorobutyl)phosphorane; perfluoroalkyl phosphate salt, organic solvent, and polymer mixts. as electrolytes)

IT 91543-32-7, Phosphorane, difluorotris(pentafluoroethyl)- 91543-34-9, Phosphorane, difluorotris(nonafluorobutyl)-
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with lithium fluoride; perfluoroalkyl phosphate salt, organic solvent, and polymer mixts. as electrolytes)

IT **394692-80-9 394692-84-3 394692-91-2**
394692-92-3 394692-93-4 394692-94-5
425633-73-4 425633-74-5 425633-75-6
425633-76-7

RL: TEM (Technical or engineered material use); USES (Uses)
 (electrolytes containing; perfluoroalkyl phosphate salt, organic solvent,
 and polymer mixts. as electrolytes)

RN 394692-80-9 HCAPLUS

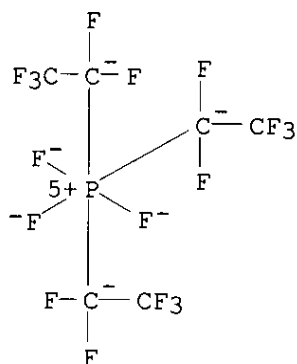
CN Ethanaminium, N,N,N-triethyl-, (OC-6-21)-trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 123199-69-9

CMF C6 F18 P

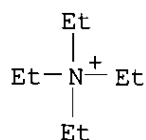
CCI CCS



CM 2

CRN 66-40-0

CMF C8 H20 N



RN 394692-84-3 HCAPLUS

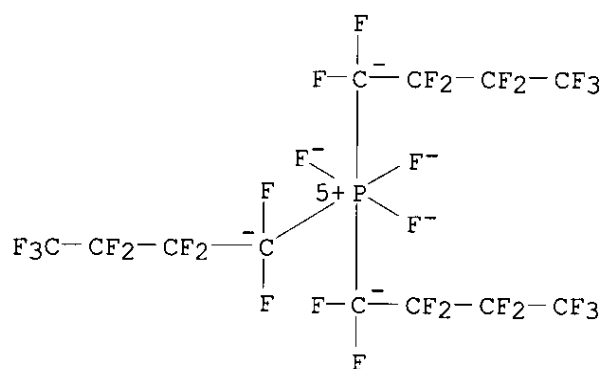
CN Methanaminium, N,N,N-trimethyl-, (OC-6-21)-trifluorotris(nonafluorobutyl)phosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 377739-46-3

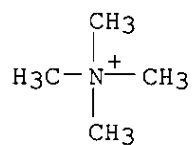
CMF C12 F30 P

CCI CCS



CM 2

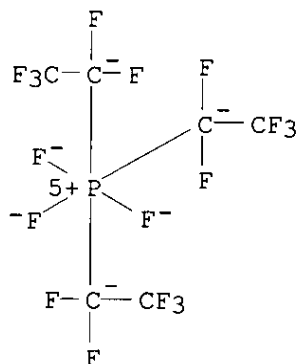
CRN 51-92-3
CMF C4 H12 N



RN 394692-91-2 HCAPLUS
CN Phosphorus(1+), tetrakis(N-methylmethanaminato)-, (T-4)-,
(OC-6-21)-trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX
NAME)

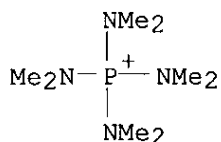
CM 1

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CMF C6 F18 P
CCI CCS



CM 2

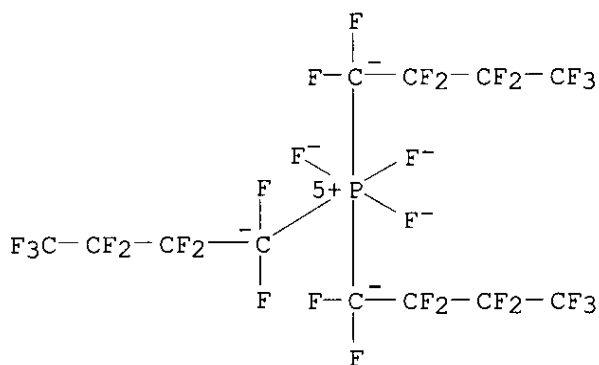
CRN 45050-74-6
CMF C8 H24 N4 P



RN 394692-92-3 HCAPLUS
CN Phosphorus(1+), tetrakis(N-methylmethanaminato)-, (T-4)-,
(OC-6-21)-trifluorotris(nonafluorobutyl)phosphate(1-) (9CI) (CA INDEX
NAME)

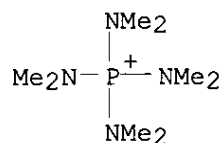
CM 1

CRN 377739-46-3
CMF C12 F30 P
CCI CCS



CM 2

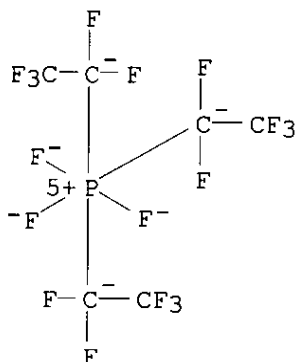
CRN 45050-74-6
CMF C8 H24 N4 P



RN 394692-93-4 HCAPLUS
CN Methanaminium, N-[bis(dimethylamino)methylene]-N-methyl-,
(OC-6-21)-trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX
NAME)

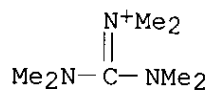
CM 1

CRN 123199-69-9
CMF C6 F18 P
CCI CCS



CM 2

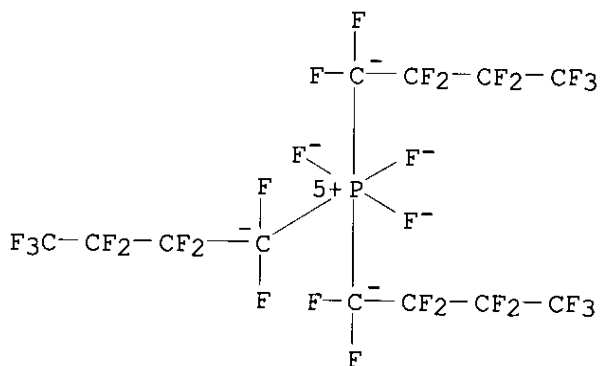
CRN 44872-05-1
CMF C7 H18 N3



RN 394692-94-5 HCAPLUS
CN Methanaminium, N-[bis(dimethylamino)methylene]-N-methyl-,
(OC-6-21)-trifluorotris(nonafluorobutyl)phosphate(1-) (9CI) (CA INDEX
NAME)

CM 1

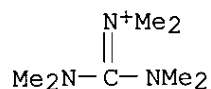
CRN 377739-46-3
CMF C12 F30 P
CCI CCS



CM 2

CRN 44872-05-1

CMF C7 H18 N3



RN 425633-73-4 HCAPLUS

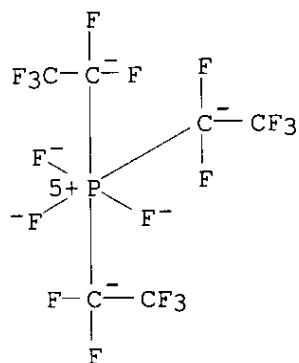
CN Phosphonium, tetramethyl-, (OC-6-21)-trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 123199-69-9

CMF C6 F18 P

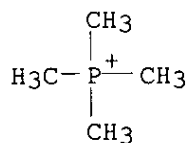
CCI CCS



CM 2

CRN 32589-80-3

CMF C4 H12 P

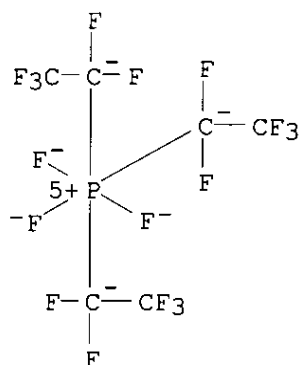


RN 425633-74-5 HCAPLUS

CN Phosphonium, tetraethyl-, (OC-6-21)-trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX NAME)

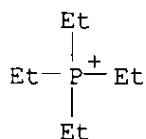
CM 1

CRN 123199-69-9
CMF C6 F18 P
CCI CCS



CM 2

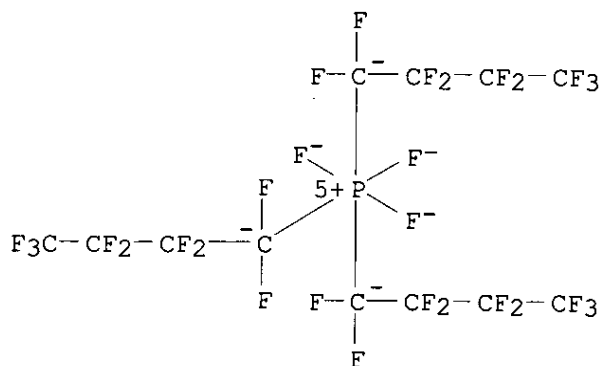
CRN 13983-95-4
CMF C8 H20 P



RN 425633-75-6 HCAPLUS
CN Phosphonium, tetramethyl-, (OC-6-21)-trifluorotris(nonafluorobutyl)phosphate(1-) (9CI) (CA INDEX NAME)

CM 1

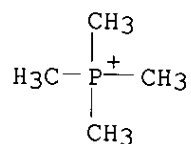
CRN 377739-46-3
CMF C12 F30 P
CCI CCS



CM 2

CRN 32589-80-3

CMF C4 H12 P



RN 425633-76-7 HCAPLUS

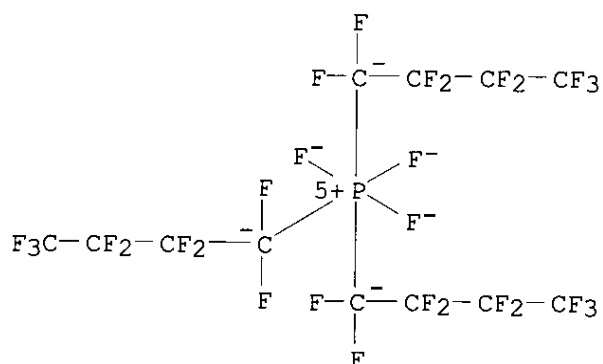
CN Phosphonium, tetraethyl-, (OC-6-21)-trifluorotris(nonafluorobutyl)phosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 377739-46-3

CMF C12 F30 P

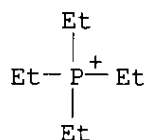
CCI CCS



CM 2

CRN 13983-95-4

CMF C8 H20 P



L56 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:193334 HCAPLUS
DN 136:234719

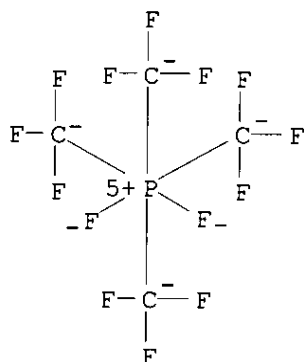
KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

ED Entered STN: 17 Mar 2002
 TI Nonaqueous electrolyte secondary lithium battery
 IN Imachi, Naoki; Watanabe, Hiroshi; Oikawa, Satoshi
 PA Sanyo Electric Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 15 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M010-40; H01M004-02; H01M004-58
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002075441	A2	20020315	JP 2000-255825	20000825
PRAI	JP 2000-255825		20000825		
AB	In the battery, the electrolytic solution contains vinylene carbonate as a solvent and $\text{LiPF}_6\text{-X}(\text{CnF}_{2n+1})\text{X}$ ($\text{X} = 1\text{-}5$; $n = 1, 2$; preferably $\text{X} = 2, 3$ and $n = 2$) as a solute. The battery shows improved tolerance for overdischarge.				
ST	lithium battery perfluoroalkyl fluorophosphate electrolyte overdischarge tolerance; vinylene carbonate solvent lithium battery perfluoroalkyl fluorophosphate solute				
IT	Secondary batteries (lithium; nonaq. electrolyte secondary lithium battery containing lithium perfluoroalkyl perfluorophosphate and vinylene carbonate as electrolyte)				
IT	Battery electrolytes (nonaq. electrolyte secondary lithium battery containing lithium perfluoroalkyl perfluorophosphate and vinylene carbonate as electrolyte)				
IT	52627-24-4, Cobalt lithium oxide RL: DEV (Device component use); USES (Uses) (cathode active material; nonaq. electrolyte secondary lithium battery containing lithium perfluoroalkyl perfluorophosphate and vinylene carbonate as electrolyte)				
IT	872-36-6, Vinylene carbonate RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (nonaq. electrolyte secondary lithium battery containing lithium perfluoroalkyl perfluorophosphate and vinylene carbonate as electrolyte)				
IT	365454-70-2 365454-71-3, Lithium pentafluorotrifluoromethylphosphate 365460-35-1, Lithium trifluorotris(trifluoromethyl)phosphate 403694-30-4 , Lithium difluorotetrakis(trifluoromethyl)phosphate 403694-31-5 , Lithium fluoropentakis(trifluoromethyl)phosphate 403694-32-6, Lithium pentafluoroperfluoroethylphosphate 403694-33-7 , Lithium difluorotetrakis(perfluoroethyl)phosphate 403694-34-8 , Lithium fluoropentakis(perfluoroethyl)phosphate 403699-21-8 403699-22-9, Lithium trifluorotris(perfluoroethyl)phosphate RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (nonaq. electrolyte secondary lithium battery containing lithium perfluoroalkyl perfluorophosphate and vinylene carbonate as electrolyte)				
IT	39457-42-6, Lithium manganese oxide 61179-01-9, Aluminum lithium manganese oxide RL: DEV (Device component use); USES (Uses) (spinel, cathode active material; nonaq. electrolyte secondary lithium				

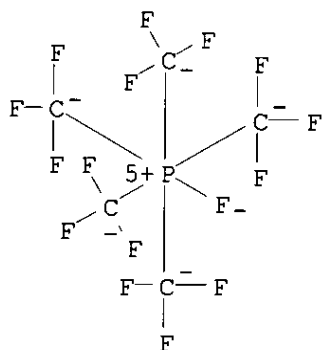
battery containing lithium perfluoroalkyl perfluorophosphate and vinylene carbonate as electrolyte)

IT 403694-30-4, Lithium difluorotetrakis(trifluoromethyl)phosphate
 403694-31-5, Lithium fluoropentakis(trifluoromethyl)phosphate
 403694-33-7, Lithium difluorotetrakis(perfluoroethyl)phosphate
 403694-34-8, Lithium fluoropentakis(perfluoroethyl)phosphate
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (nonaq. electrolyte secondary lithium battery containing lithium perfluoroalkyl perfluorophosphate and vinylene carbonate as electrolyte)
 RN 403694-30-4 HCAPLUS
 CN Phosphate(1-), difluorotetrakis(trifluoromethyl)-, lithium (9CI) (CA INDEX NAME)



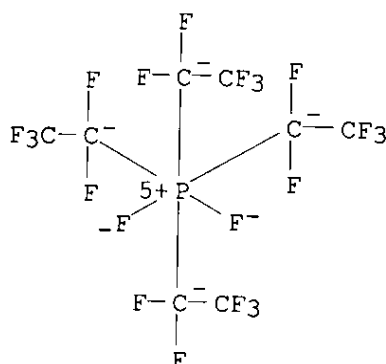
● Li⁺

RN 403694-31-5 HCAPLUS
 CN Phosphate(1-), fluoropentakis(trifluoromethyl)-, lithium, (OC-6-22)- (9CI)
 (CA INDEX NAME)



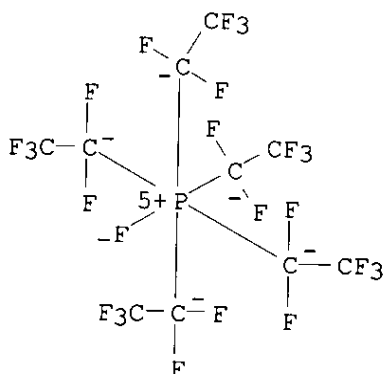
● Li⁺

RN 403694-33-7 HCAPLUS
CN Phosphate(1-), difluorotetrakis(pentafluoroethyl)-, lithium (9CI) (CA INDEX NAME)



● Li⁺

RN 403694-34-8 HCAPLUS
CN Phosphate(1-), fluoropentakis(pentafluoroethyl)-, lithium, (OC-6-22)-(9CI) (CA INDEX NAME)



● Li⁺

L56 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:104662 HCAPLUS
DN 136:151308
ED Entered STN: 08 Feb 2002
TI Preparation of fluoroalkylphosphates for use in electrochemical cells
IN Heider, Udo; Schmidt, Michael; Kuehner, Andreas; Sartori, Peter; Ignatyev, Nikolai
PA Merck Patent G.m.b.H., Germany
SO Eur. Pat. Appl., 15 pp.

applicants

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

CODEN: EPXXDW
 DT Patent
 LA German
 IC ICM C07F009-28
 ICS C07C211-63; C07C211-14; H01M010-40
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 72

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1178050	A2	20020206	EP 2001-115786	20010711
	EP 1178050	A3	20020925		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	DE 10038858	A1	20020214	DE 2000-10038858	20000804
	TW 530432	B	20030501	TW 2001-90118520	20010731
	US 2002022182	A1	20020221	US 2001-918464	20010801
	BR 2001003182	A	20020319	BR 2001-3182	20010802
	JP 2002138095	A2	20020514	JP 2001-235045	20010802
	CN 1337398	A	20020227	CN 2001-123298	20010803
PRAI	DE 2000-10038858	A	20000804		
OS	MARPAT 136:151308				
AB	The preparation of fluoroalkylphosphates via cation exchange reaction is described. Thus, reaction of Li[PF ₃ (C ₂ F ₅) ₃] with Et ₄ NX (X = F, Cl) gave title compds., Et ₄ N[PF ₃ (C ₂ F ₅) ₃]. The prepared compds. are useful as supporting electrolyte in batteries, condensation, supercondensation, and electrochem. cells.				
ST	fluoroalkyl phosphate prepn electrolyte electrochem cell				
IT	Phosphates, preparation				
	RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)				
	(fluoroalkylphosphates; preparation of fluoroalkylphosphates for use in electrochem. cells)				
IT	Electrochemical cells				
	Electrolytes				
	Primary batteries				
	(preparation of fluoroalkylphosphates for use in electrochem. cells)				
IT	56-34-8, Tetraethylammonium chloride 665-46-3, Tetraethylammonium fluoride 30388-20-6 66647-63-0 234451-74-2				
	RL: RCT (Reactant); RACT (Reactant or reagent)				
	(cation exchange reaction of fluoroalkylphosphates with)				
IT	206057-04-7				
	RL: RCT (Reactant); RACT (Reactant or reagent)				
	(cation exchange reaction with ammonium salts)				
IT	394692-80-9P 394692-83-2P 394692-84-3P				
	394692-91-2P 394692-92-3P 394692-93-4P				
	394692-94-5P				
	RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)				
	(preparation of fluoroalkylphosphates for use in electrochem. cells)				
IT	91543-32-7 91543-34-9				
	RL: RCT (Reactant); RACT (Reactant or reagent)				
	(reaction with ammonium salts)				
IT	394692-80-9P 394692-83-2P 394692-84-3P				
	394692-91-2P 394692-92-3P 394692-93-4P				
	394692-94-5P				
	RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)				
	(preparation of fluoroalkylphosphates for use in electrochem. cells)				

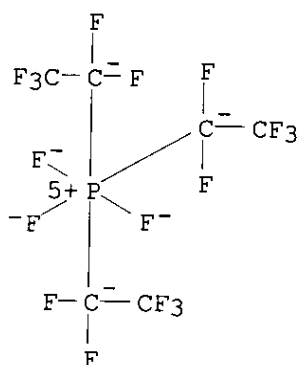
RN 394692-80-9 HCAPLUS
 CN Ethanaminium, N,N,N-triethyl-, (OC-6-21)-trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 123199-69-9

CMF C6 F18 P

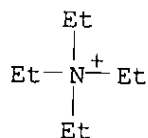
CCI CCS



CM 2

CRN 66-40-0

CMF C8 H20 N



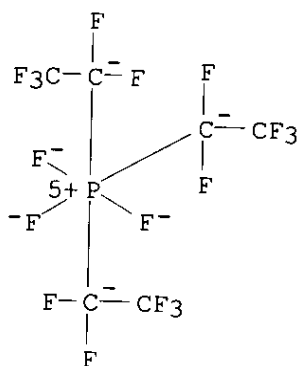
RN 394692-83-2 HCAPLUS
 CN Methanaminium, N,N,N-trimethyl-, (OC-6-21)-trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 123199-69-9

CMF C6 F18 P

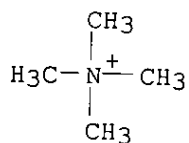
CCI CCS



CM 2

CRN 51-92-3

CMF C4 H12 N



RN 394692-84-3 HCAPLUS

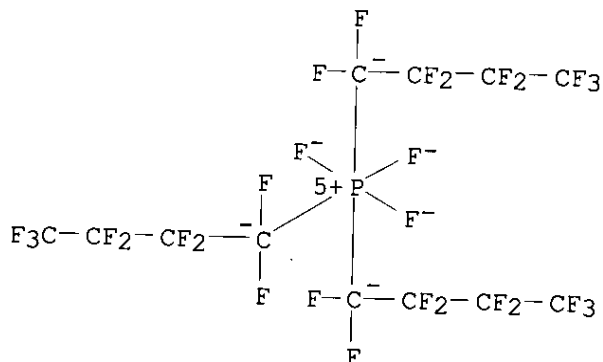
CN Methanaminium, N,N,N-trimethyl-, (OC-6-21)-trifluorotris(nonafluorobutyl)p
hosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 377739-46-3

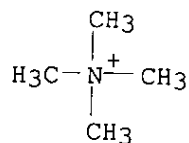
CMF C12 F30 P

CCI CCS



CM 2

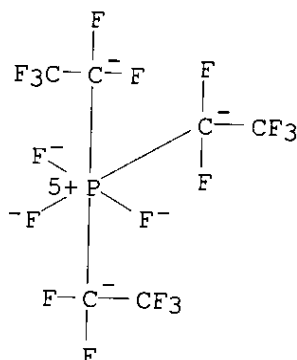
CRN 51-92-3
CMF C4 H12 N



RN 394692-91-2 HCAPLUS
CN Phosphorus(1+), tetrakis(N-methylmethanaminato)-, (T-4)-, (OC-6-21)-trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX NAME)

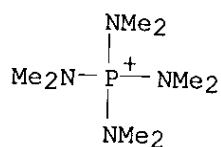
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CCI CCS



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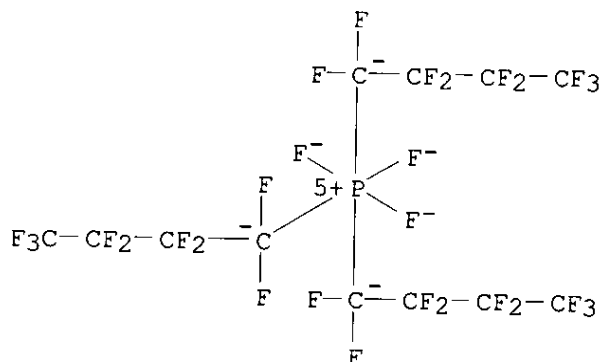
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CMF C8 H24 N4 P



RN 394692-92-3 HCAPLUS
CN Phosphorus(1+), tetrakis(N-methylmethanaminato)-, (T-4)-, (OC-6-21)-trifluorotris(nonafluorobutyl)phosphate(1-) (9CI) (CA INDEX NAME)

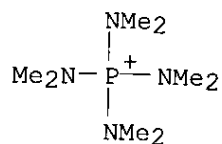
CM 1

CRN 377739-46-3
CMF C12 F30 P
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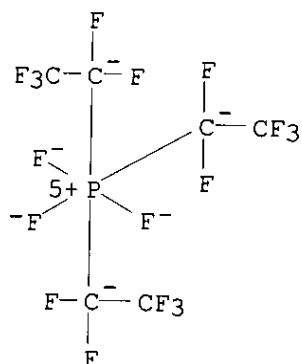
CRN 45050-74-6
CMF C8 H24 N4 P



RN 394692-93-4 HCAPLUS
CN Methanaminium, N-[bis(dimethylamino)methylene]-N-methyl-,
(OC-6-21)-trifluorotris(pentafluoroethyl)phosphate(1-) (9CI) (CA INDEX
NAME)

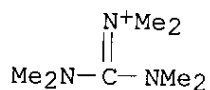
CM 1

CRN 123199-69-9
CMF C6 F18 P
CCI CCS



CM 2

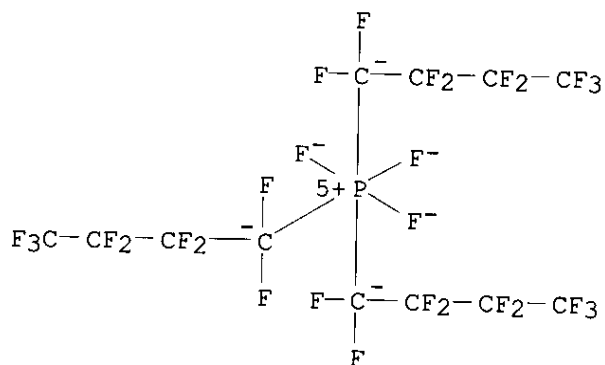
CRN 44872-05-1
CMF C7 H18 N3



RN 394692-94-5 HCAPLUS
CN Methanaminium, N-[bis(dimethylamino)methylene]-N-methyl-,
(OC-6-21)-trifluorotris(nonafluorobutyl)phosphate(1-) (9CI) (CA INDEX
NAME)

CM 1

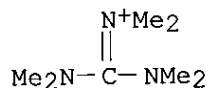
CRN 377739-46-3
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CCI CCS



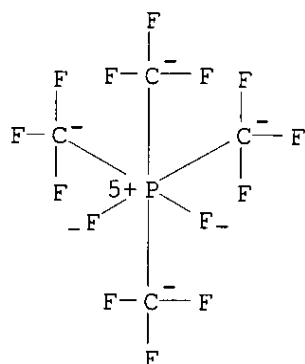
CM 2

CRN 44872-05-1

CMF C7 H18 N3



L56 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1968:114717 HCAPLUS
 DN 68:114717
 ED Entered STN: 12 May 1984
 TI Trifluoromethyl-substituted fluorophosphates and fluoroarsenates
 AU Chan, S. S.; Willis Christopher J.
 CS Univ. Western Ontario, London, ON, Can.
 SO Canadian Journal of Chemistry (1968), 46(8), 1237-48
 CODEN: CJCHAG; ISSN: 0008-4042
 DT Journal
 LA English
 CC 29 (Organometallic and Organometalloidal Compounds)
 AB Synthetic routes were developed to salts containing the anions $[\text{CF}_3\text{PF}_5]^-$, $[(\text{CF}_3)_2\text{PF}_4]^-$, $[(\text{CF}_3)_3\text{AsF}_4]^-$, $[(\text{CF}_3)_2\text{AsF}_4]^-$, and $[(\text{CF}_3)_3\text{AsF}_3]^-$. These are isolated as stable solids with Cs^+ , or sometimes Ag^+ , as the cation. Their ^{19}F N.M.R. spectra are discussed, and it is suggested that the bis- and tris(trifluoromethyl)-substituted fluorophosphates have a trans configuration. Trimethyltrifluoromethyltin, Me_3SnCF_3 , forms 1:1 complexes with PF_5 , $(\text{CF}_3)_2\text{PF}_3$, and $(\text{CF}_3)_3\text{PF}_2$. It is suggested that transfer of a trifluoromethyl group as CF_3^- has occurred here, leading to the formation of trimethyltin derivs. of the trifluoromethyl-substituted fluorophosphates. 22 references.
 ST TINS TRIMETHYL TRIFLUOROMETHYL; TRIMETHYL TRIFLUOROMETHYL TINS; FLUOROPHOSPHATES TRIFLUOROMETHYL; TRIFLUOROMETHYL FLUOROPHOSPHATES; FLUOROARSENATES TRIFLUOROMETHYL
 IT 18114-91-5P 18128-78-4P 18128-79-5P 18128-80-8P 18128-81-9P
 18757-45-4P 18757-46-5P **18757-47-6P** 26062-20-4P
 27774-97-6P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of)
 IT **18757-47-6P**
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of)
 RN 18757-47-6 HCAPLUS
 CN Stannylum, trimethyl-, difluorotetrakis(trifluoromethyl)phosphate(1-)
 (9CI) (CA INDEX NAME)
 CM 1
 CRN 45224-05-3
 CMF C4 F14 P
 CCI CCS

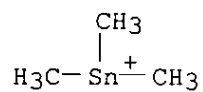


CM 2

CRN 5089-96-3

CMF C3 H9 Sn

CCI CCS



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